REMARKS

Favorable reconsideration of this application in view of the remarks to follow is respectfully requested. Since the present Response raises no new issues, and in any event, places the application in better condition for consideration on appeal, entry thereof is respectfully requested under the provisions of 37 C.F.R. §1.116.

Before addressing the specific grounds of rejection, Applicants take this opportunity to discuss the Applicants' invention. The present invention relates to a method for manufacturing 3D integrated structures based on an assembly approach in which a layer-to-be transferred is coated with a bi-layer capping stack, a polyimide layer, and an adhesive layer. That structure is then bonded to a glass carrier-wafer and upon removal of the bulk silicon, it is transferred to a new circuit, and attached to this new circuit using bonding techniques such as, for example, adhesive bonding. In the subsequent step, the glass layer is released (for example, by laser ablation), and the residual polyimide layer is removed by plasma ashing using oxygen. The aforementioned protecting capping stack is comprised of two layers including a first layer of silicon nitride and a second layer of an amino silane deposited over the whole area of the wafer. The first layer of silicon nitride provides protection from oxygen diffusion during the plasma ashing process used to remove the polyimide layer.

In an effort to reflect this aspect of Applicants' invention, Applicants have amended Claim 1 to recite that the first layer of silicon nitride protects the metallic element or the patterned metallic element from the oxygen-based plasma removal process. Support for the amendment to Claim 1 is found in original Claim 18, wherein original Claim 18 is now cancelled. Turning to the present grounds of rejection.

Claims 1-6, 8-11 and 13-18 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Applicants' Admitted Prior Art ("AAPA") and U.S. Patent No. 5,287,003 to

Van Andel et al. ("Van Andel et al."). Claims 1-6, 8-11 and 13-18 stand rejected under 35 U.S.C. 103(a) as allegedly unpatentable over Applicants' Admitted Prior Art ("AAPA") in view of European Patent Application No. 251347 to Ponjée et al. ("Ponjée et al."). Applicants traverse the aforementioned rejections and submit the following.

"To establish a prima facie case of obviousness of a claimed invention all the claimed limitations must be taught or suggested by the prior art". *In re Wilson,* 424 F.2d 1382, 1385, 165 USPQ 44, 496 (CCPA 1970). Applicants submit that the applied prior art fails to render Applicants' claimed structure unpatentable, because the applied prior art fails to teach or suggest each and every limitation of Applicants' claims. More specifically, the applied prior art fails to teach or suggest a structure for interconnecting semiconductor components comprising a layered substrate for transferring a device layer and an interconnect layer, and a bi-layer capping coating on top of the layered substrate comprising a first layer of silicon nitride abutting an upper surface of the interconnect layer and a second layer of an amino silane atop the first layer of silicon nitride, wherein the first layer of silicon nitride protects a metallic element or a patterned metallic element from an oxygen-based plasma removal process, as recited in amended Claim 1.

Referring to the Applicants' admitted prior art (AAPA), Applicants observe that the present specification clearly indicates that, a bi-layer capping coating including a silicon nitride layer that protects a metallic element or a patterned metallic element from an oxygen-based plasma removal process utilized to remove a polyamide layer as part of a layer transfer process had not been provided prior to Applicants' invention.

Referring to Page 1 of the Final Office Action, the Examiner relies on the disclosure of Van Andel et al. to meet the limitation of the bi-layer capping layer. Van Andel et al. discloses a semiconductor device having a reduced sensitivity to the formation of cracks in a passivating film and, hence, an improved reliability and life expectancy of the chip. Referring to Page 2 of

the present Office Action, the Examiner alleges that Column 3, line 51, to Column 6, line 3, of Van Andel et al. discloses a bilayer capping layer having a silicon nitride layer that protects from an oxygen based plasma removal process. Applicants' respectfully disagree.

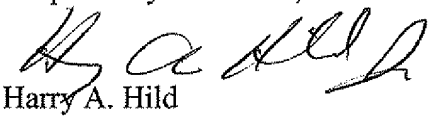
Applicants observe that Van Andel et al. fails to disclose a layer transfer technique, or utilizing an oxygen based plasma in conjunction with removing a polyamide layer. Therefore, Van Andel et al. fails to teach or suggest a structure for interconnecting semiconductor components comprising a layered substrate for transferring a device layer and an interconnect layer, and a bi-layer capping coating on top of the layered substrate comprising a first layer of silicon nitride abutting an upper surface of the interconnect layer and a second layer of an amino silane atop said first layer of silicon nitride, wherein said first layer of silicon nitride protects a metallic element or a patterned metallic element from an oxygen-based plasma removal process, as recited in amended Claim 1.

Ponjée et al. also fails to render Applicants' claimed structure unpatentable, because the applied prior art reference fails to teach or suggest each and every limitation recited in amended Claim 1. Ponjée et al. discloses a semiconductor device having one surface that is covered with a silicon nitride layer, which layer is hydrophilic, after which a bonding agent is provided on the silicon nitride layer. Thereafter, a layer of a photosensitive polyamide is then provided in which a pattern of apertures it etched to give access to contact pads for electrical communication. Referring to Page 8 of the final Office Action, the Examiner alleges that Column 1, lines 1-29, and Column 3, line 36, of Ponjée et al. meets the limitation of Applicants' claimed bilayer that includes a first layer of silicon nitride that protects a metallic element or a patterned metallic element from an oxygen-based plasma removal process, as recited in amended Claim 1. Applicants respectfully disagree and submit the following.

Applicants observe that Ponjée et al. fails to disclose a layer transfer technique, or utilizing an oxygen based plasma in conjunction with removing a polyamide layer. Therefore, Ponjée et al. fails to teach or suggest a structure for interconnecting semiconductor components comprising a layered substrate for transferring a device layer and an interconnect layer, and a bi-layer capping coating on top of the layered substrate comprising a first layer of silicon nitride abutting an upper surface of the interconnect layer and a second layer of an amino silane atop said first layer of silicon nitride, wherein said first layer of silicon nitride protects a metallic element or a patterned metallic element from an oxygen-based plasma removal process, as recited in amended Claim 1.

Applicants submit that the present §103 rejections have been obviated. Applicants respectfully request that the §103 rejections be withdrawn and that an immediate notice of allowance be issued. If any issues remain outstanding, incident to the formal allowance of the application, the Examiner is requested to contact the undersigned at (516) 742-4343 to discuss the same, in order that this application may be allowed and passed to issue at an early date.

Respectfully submitted,



Harry A. Hild
Registration No. 51,803

SCULLY, SCOTT, MURPHY & PRESSER, P.C.
400 Garden City Plaza - Suite 300
Garden City, New York 11530
(516) 742-4343
HAH:reg